Sistemi ICT per il Business Networking

Electronic Data Interchange (EDI)

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Introduction

- **Need** of a fast and standardized processing of the business

- **Electronic exchange of data**: a modern instrument to accelerate internal and external processes

- **Electronic Data Interchange (EDI)**:
  - the **computer-to-computer exchange** of **structured information**, ...
  - ... by **agreed message standards**, ...
  - ... **from one computer application to another** ...
  - ... by **electronic means** and ...
  - ... with a **minimum of human intervention**

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Electronic Data Interchange (EDI)

- In **common usage**, EDI is understood to mean specific interchange methods agreed upon by national or international standards bodies for the transfer of business transaction data

- Advantages:
  - **Avoidance** of **costs-intense recording** activities **susceptible to error**
  - **Automatic data exchange** with standardized formats
  - Communication **between computer applications**
  - **Faster flow of information** (at any time and world-wide)
  - **Costs saving**

Electronic Data Interchange (EDI)

Worldwide

Applicationsystem   **EDI**   Applicationsystem

Fast flow of information
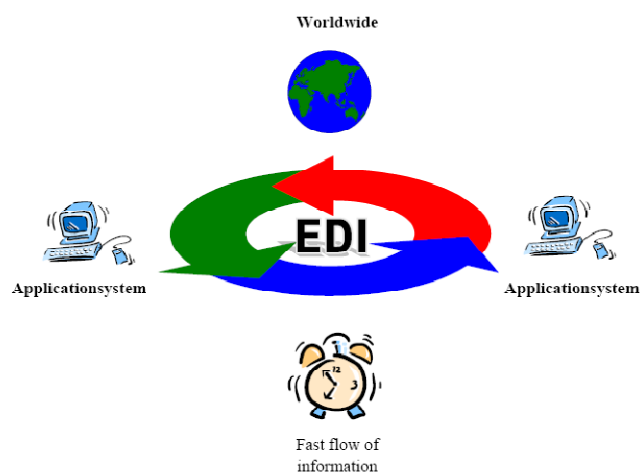
Business processes without EDI

- document creation ➔ printout and shipment ➔ re-recording by business partner's data department

- This 'intermediate storage' on paper is also referred to as an '**interruption of medium**'.

  - **Avoiding this 'interruption of medium'** in the logistical chain between a company and the supplier **yields** a lot of **cost saving** potentials for both sides

Electronic exchange of business data

- The electronic exchange of business data **enables** quick information exchange operations between business partners, **without any delays** in time, **24 hours a day**, **7 days a week**

- To be able to implement such processes, **the corresponding message formats and communication structures have to be standardised (or agreed)**

- Surprisingly, in this era of technologies such as XML services, the Internet and the World Wide Web, **EDI is still the data format used by the vast majority of electronic commerce transactions in the world**

EDI

- **Electronic Data Interchange (EDI)** is defined as the **transfer** of **structured data** by **agreed message standards** **from computer to computer** **by electronic means**

- Therefore key concepts are the following:
  - structured data
  - message standards
  - from computer to computer
  - electronic means

EDI: structured data & from computer to computer

- **What is structured data? How is it different from the printed document? Is it the same as electronic mail?**

- **Printed documents and electronic mail** are <u>designed for humans</u>
  - they can be easily created and acted upon by humans

- **EDI** <u>requires</u> that the computer system itself <u>can easily generate and process messages</u>

- The data format is **designed for computers**

- EDI in **not very readable for humans**

EDI: message standards

- Clearly, **trading partners must agree** <u>what data</u> is being exchanged, and <u>in what sequence</u> their computer systems should generate the data. **But why to have standards?**

- EDI is concerned with exchanging messages in an **open environment → Any company can join**

  - **No one** company **can impose** its own data standards (?)

  - **Internal data standards** are fine for use <u>within an organisation</u>, but will not work outside the organisation

  - There needs to be a **universally agreed** standard message structure

    - IMPORTANT: **universal** <u>doesn't mean the whole world</u> has to agree; it means **any company participating in a particular EDI community** must agree

EDI: electronic means

- **In the early days of EDI** data was put onto **magnetic tape** and either **posted or sent by courier** to the recipient, who then loaded the tape on a tape deck and the computer read it in the system

- This method was fine for a while, but **problems** arose:

  - The tape was being **physically sent**, and this took **<u>time</u>**

  - The number of tapes that any one organisation needed to handle was growing, leading to a **scheduling problem**

  - The tapes themselves were **vulnerable**

EDI: electronic means

- The solution to all of these problem is **to send data by telecommunications**, and **since the early 1980's** this has been the increasingly preferred method

- However, this method is not without its own problems:
    - **Timing problem** - bilateral computer links require the both organisations schedule the link at the same time
    - **Each link costs** money
    - **When the number of trading partners grows**, the number of one-to-one links eventually becomes unmanageable
    - **Incompatible computer systems**

- **One solution** is to join an EDI service run by a **Value Added Network (VAN)** supplier

EDI Standards

- Designed **to be independent** of lower level technologies and **transmitted** using **Internet protocols** as well as **private networks**

- It is important to **differentiate** between the EDI documents and the methods for transmitting them
    - The **older transmission methods** are being replaced by Internet Protocols such as FTP, telnet and email, although standards for these media are still emerging
    - In 2002, the IETF published RFC 3335, offering a **standardized, secure method of transferring EDI data via e-mail**
    - An IETF working group, EDIINT, is preparing similar documents for **HTTP and FTP transfers**

EDI documents

- EDI documents contain **the same data** that would normally be found <u>in a paper document</u> used for the same organisational function

  - Example: an EDI 940 **ship-from-warehouse** order is used by a manufacturer to tell a warehouse to ship product to a retailer
    - a ship to address
    - a list of product numbers (usually a UPC code)
    - quantities
    - other information if the parties agree to include it

- EDI is **not confined to just business data** related to trade but encompasses all fields such as **medicine** (patient records, laboratory results, etc.), **transport** (container and modal information, etc.), **engineering**, **construction**, etc.

EDI Standards

- Three major sets of **EDI standards**

  - **UN/EDIFACT** is the only international standard (in fact, a United Nations recommendation) and is predominant in <u>all areas outside of North America</u>

  - **ANSI ASC X12 (X12)** and the **Uniform Communication Standard (UCS)** are popular in <u>North America</u> and are **very similar to each other**

EDI Standards

- These standards **prescribe**
  - the **formats**
  - **character sets**, and
  - **data elements** used in the exchange of documents and forms

- The standard **says**
  - which pieces of information are **mandatory** for a particular document
  - which pieces of information are **optional** for a particular document
  - the **rules for the structure** of the document

Trading partners

- **Trading partners** (EDI Terminology): organizations that send or receive documents from each other
- The trading partners **agree** on some <u>human readable specifications</u> (also called **specification sheets**)
  - the **specific information** to be transmitted and
  - **how** it should be **used** (semantics)
- **Larger companies**
  - have **existing specification sheets** and
  - are usually **unwilling to negotiate**

Inbound and outbound document

- In EDI terminology "**inbound**" and "**outbound**" refer to the **direction of transmission** of an EDI document in relation to a particular system (not the direction of merchandise, money or other things represented by the document)

  - For example, an EDI document that tells a warehouse to perform an **outbound shipment** is an **inbound document** in relation to the warehouse computer system. It is an **outbound document** in relation to the manufacturer or dealer that transmitted the document.

EDIFACT

- The acronym stands for **United Nations/Electronic Data Interchange For Administration, Commerce, and Transport**
- Developed under the **United Nations**
- The work of maintenance and further development of this standard is done by the **United Nations Centre for Electronic commerce For Administration, Commerce, and Transport** (UN/CEFACT) (under the **UN Committee on Trade, Economic and Social Council**)
- EDIFACT was developed <u>from</u> 2 fairly widely used **standards** and incorporate the best of the both

  - American JEDI and the United Nations standard for Europe

United Nations Centre for Electronic commerce For Administration, Commerce, and Transport (UN/CEFACT)

- **Web site**: http://www.unece.org/cefact

- **Mission**: to **improve** the ability of business, trade and administrative organizations, from developed, developing and transitional economies, to exchange products and relevant services effectively - and so contribute to the growth of global commerce

- UN/CEFACT facilitates the **development of e-business standards** that can **cross all international boundaries** and help **lower transaction costs**, simplify data flow and reduce bureaucracy

- Work outputs of UN/CEFACT activities include **ebXML**, UN/CEFACT's Modelling Methodology (UMM) and **UN/EDIFACT**.

UN/CEFACT

EDIFACT

- EDIFACT has been adopted by the International Organization for Standardization (ISO) as the **ISO 9735**

- Provides:
    - a **set of syntax rules** to structure data
    - an **interactive exchange protocol** (I-EDI)
    - **standard messages** (allowing multi-country and multi-industry exchange)

EDIFACT

- The **EDIFACT Standard is**:
    - **application independent**
    - **communication medium independent**
    - **machine independent**
- So EDI and more concretely **EDIFACT gives to the user**:
    - **quicker delivery** and overall **greater accuracy in ordering**
    - **improved logistics** generally, particularly resulting in **lower storage/warehousing costs**

EDIFACT - Structure

- EDIFACT has a **hierarchical structure**

  - The top level element is referred to a **message**.

  - A message is a sequence of groups and segments.

  - A **group** or **segment** can be mandatory (M) or conditional (C) and can be specified to repeat

    - For example C99 would indicate between 0 and 99 repetitions of a segment or group, whereas M99 would mean between 1 and 99 repetitions

Interchange
Interchange Envelope

Message Envelope
Segments
Segments
Segments

Message Envelope
Segments
Segments
Segments

Interchange Envelope
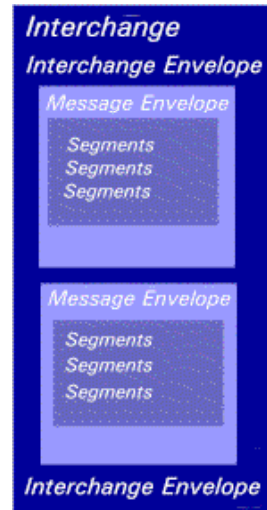
EDIFACT – Structure: Data elements

- A vital part of the EDIFACT process is the data element directory which is contained within an international standard, ISO 73 72, and it's referred to as the **Trade Data Elements Directory (TDED)**

- Each data element has **a set of attributes**. The basic attributes interesting to EDIFACT users set out of the TDED are:

  - Coded tag or Identifier

  - Title

  - Plain text descriptor

  - A format (Length and data type or class)

  - Date of insertion in the directory

EDIFACT – Structure: Format

- To indicate the format or **data type** of a data element EDITACT uses the following notation:
  - **a**n means n alphabetic characters
  - **n**n means n numeric characters
  - **an**n means n alpha-numeric characters
  - **a**$..n$ means up to n alphabetic characters
  - **an**$..n$ means up to n alpha-numeric characters
  - **n**$..n$ means up to n numeric characters

Example of EDIFACT message

- Used to answer to a product availability request

```
UNB+IATB:1+1APPC+LHPPC+940101:0950+1'
UNH+1+PAORES:93:1:IA'
MSG+1:45'
IFT+3+?*XYZCOMPANY AVAILABILITY?*'
ERC+A7V:1:AMD'
IFT+3+NO MORE FLIGHTS'
ODI'
TVL+240493:1000::1220+FRA+JFK+DL+400+C'
PDI++C:3+Y::3+F::1'
APD+74C:0:::6+++++1A'
TVL+240493:1740::2030+JFK+MIA+DL+081+C'
PDI++C:4'
APD+EM2:0:1630::6+++++++DA'
UNT+13+1'
UNZ+1+1'
```

- ' is a **segment terminator**
- + is a **data element separator**
- : is a **component data element separator**
- * is a **repetition separator**

Example of EDIFACT message

- **UNH+1+PAORES:93:1:IA'**- the header segment
    - required at the start of every message
    - the message name and version is PAORES 93 revision 1 and it was defined by the organisation IA (IATA)
- **IFT+3+NO MORE FLIGHTS'** - an 'Interactive Free Text' segment containing the text 'NO MORE FLIGHTS'
- **UNT+13+1'** - the tail segment
    - It indicated that the message sent contains 13 segments

EDIFACT Messages

APERAK	Application error and acknowledgement message
AUTHOR	Authorization message
BALANC	Balance message
BANSTA	Banking status message
BAPLIE	Bayplan/stowage plan occupied and empty locations message
BERMAN	Berth management message
BMISRM	Bulk marine inspection summary report message
BOPBNK	Bank transactions and portfolio transactions report message
BOPCUS	Balance of payment customer transaction report message
BOPDIR	Direct balance of payment declaration message

EDIFACT Messages

BOPINF	Balance of payment information from customer message
BUSCRD	Business credit report message
CALINF	Vessel call information message
CASINT	Request for legal administration action in civil proceedings message
CASRES	Legal administration response in civil proceedings message
CHACCO	Chart of accounts message
CLASET	Classification information set message
CNTCND	Contractual conditions message
COACSU	Commercial account summary message
COARRI	Container discharge/loading report message

EDIFACT Messages

CODECO	Container gate-in/gate-out report message
CODENO	Permit expiration/clearance ready notice message
COEDOR	Transport equipment stock and profile report message
COHAOR	Container special handling order message
COLREQ	Request for a documentary collection message
COMDIS	Commercial dispute message
CONAPW	Advice on pending works message
CONDPV	Direct payment valuation message
CONDRA	Drawing administration message
CONDRO	Drawing organisation message

EDIFACT Messages

CONEST	Establishment of contract message
CONITT	Invitation to tender message
CONPVA	Payment valuation message
CONQVA	Quantity valuation message
CONRPW	Response of pending works message
CONTEN	Tender message
CONWQD	Work item quantity determination message
COPARN	Container announcement message
COPAYM	Contributions for payment
COPINO	Container pre-notification message

EDIFACT Messages

COPRAR	Container discharge/loading order message
COREOR	Container release order message
COSTCO	Container stuffing/stripping confirmation message
COSTOR	Container stuffing/stripping order message
CREADV	Credit advice message
CREEXT	Extended credit advice message
CREMUL	Multiple credit advice message
CUSCAR	Customs cargo report message
CUSDEC	Customs declaration message
CUSEXP	Customs express consignment declaration message

EDIFACT Messages

CUSPED	Periodic customs declaration message
CUSREP	Customs conveyance report message
CUSRES	Customs response message
DEBADV	Debit advice message
DEBMUL	Multiple debit advice message
DEBREC	Debts recovery message
DELFOR	Delivery schedule message
DELJIT	Delivery just in time message
DESADV	Despatch advice message
DESTIM	Equipment damage and repair estimate message

EDIFACT Messages

DGRECA	Dangerous goods recapitulation message
DIRDEB	Direct debit message
DIRDEF	Directory definition message
DMRDEF	Data maintenance request definition message
DMSTAT	Data maintenance status report/query message
DOCADV	Documentary credit advice message
DOCAMA	Advice of an amendment of a documentary credit message
DOCAMI	Documentary credit amendment information message
DOCAMR	Request for an amendment of a documentary credit message
DOCAPP	Documentary credit application message

EDIFACT Messages

DOCARE	Response to an amendment of a documentary credit message
DOCINF	Documentary credit issuance information message
ENTREC	Accounting entries message
FINCAN	Financial cancellation message
FINPAY	Multiple interbank funds transfer message
FINSTA	Financial statement of an account message
GENRAL	General purpose message
GESMES	Generic statistical message
HANMOV	Cargo/goods handling and movement message
ICASRP	Insurance claim assessment and reporting message

EDIFACT Messages

ICSOLI	Insurance claim solicitor's instruction message
IFCSUM	Forwarding and consolidation summary message
IFTCCA	Forwarding and transport shipment charge calculation message
IFTDGN	Dangerous goods notification message
IFTFCC	International transport freight costs and other charges message
IFTICL	Cargo insurance claims message
IFTMAN	Arrival notice message
IFTMBC	Booking confirmation message
IFTMBF	Firm booking message
IFTMBP	Provisional booking message

EDIFACT Messages

IFTMCA	Consignment advice message
IFTMCS	Instruction contract status message
IFTMIN	Instruction message
IFTRIN	Forwarding and transport rate information message
IFTSAI	Forwarding and transport schedule and availability information message
IFTSTA	International multimodal status report message
IFTSTQ	International multimodal status request message
IMPDEF	EDI implementation guide definition message
INFCON	Infrastructure condition message
INFENT	Enterprise accounting information message

EDIFACT Messages

INSDES	Instruction to despatch message
INSPRE	Insurance premium message
INSREQ	Inspection request message
INSRPT	Inspection report message
INVOIC	Invoice message
INVRPT	Inventory report message
IPPOAD	Insurance policy administration message
IPPOMO	Motor insurance policy message
ISENDS	Intermediary system enablement or disablement message
ITRRPT	In transit report detail message

EDIFACT Messages

JAPRES	Job application result message
JINFDE	Job information demand message
JOBAPP	Job application proposal message
JOBCON	Job order confirmation message
JOBMOD	Job order modification message
JOBOFF	Job order message
JUPREQ	Justified payment request message
LEDGER	Ledger message
LREACT	Life reinsurance activity message
LRECLM	Life reinsurance claims message

EDIFACT Messages

MEDPID	Person identification message
MEDPRE	Medical prescription message
MEDREQ	Medical service request message
MEDRPT	Medical service report message
MEDRUC	Medical resource usage and cost message
MEQPOS	Means of transport and equipment position message
MOVINS	Stowage instruction message
MSCONS	Metered services consumption report message
ORDCHG	Purchase order change request message
ORDERS	Purchase order message

EDIFACT Messages

ORDRSP	Purchase order response message
OSTENQ	Order status enquiry message
OSTRPT	Order status report message
PARTIN	Party information message
PAXLST	Passenger list message
PAYDUC	Payroll deductions advice message
PAYEXT	Extended payment order message
PAYMUL	Multiple payment order message
PAYORD	Payment order message
PRICAT	Price/sales catalogue message

EDIFACT Messages

PRIHIS	Pricing history message
PROCST	Project cost reporting message
PRODAT	Product data message
PRODEX	Product exchange reconciliation message
PROINQ	Product inquiry message
PROSRV	Product service message
PROTAP	Project tasks planning message
PRPAID	Insurance premium payment message
QALITY	Quality data message
QUOTES	Quote message

EDIFACT Messages

RDRMES	Raw data reporting message
REBORD	Reinsurance bordereau message
RECADV	Receiving advice message
RECALC	Reinsurance calculation message
RECECO	Credit risk cover message
RECLAM	Reinsurance claims message
RECORD	Reinsurance core data message
REGENT	Registration of enterprise message
RELIST	Reinsured objects list message
REMADV	Remittance advice message

EDIFACT Messages

REPREM	Reinsurance premium message
REQDOC	Request for document message
REQOTE	Request for quote message
RESETT	Reinsurance settlement message
RESMSG	Reservation message
RETACC	Reinsurance technical account message
RETANN	Announcement for returns message
RETINS	Instruction for returns message
RPCALL	Repair call message
SAFHAZ	Safety and hazard data message

EDIFACT Messages

SANCRT	International movement of goods governmental regulatory message
SLSFCT	Sales forecast message
SLSRPT	Sales data report message
SOCADE	Social administration message
SSIMOD	Modification of identity details message
SSRECH	Worker's insurance history message
SSREGW	Notification of registration of a worker message
STATAC	Statement of account message
STLRPT	Settlement transaction reporting message
SUPCOT	Superannuation contributions advice message
SUPMAN	Superannuation maintenance message

EDIFACT Messages

SUPRES	Supplier response message
TANSTA	Tank status report message
TAXCON	Tax control message
TPFREP	Terminal performance message
UTILMD	Utilities master data message
UTILTS	Utilities time series message
VATDEC	Value added tax message
VESDEP	Vessel departure message
WASDIS	Waste disposal information message
WKGRDC	Work grant decision message
WKGRRE	Work grant request message

CNTCND - Contractual conditions message

- A message **sent by a customer to a supplier** and other interested parties providing the **contractual conditions of a previously negotiated contract** in order to enable the **automatic processing of invoices for orders** which have been made against the contract or for the completion of identified stages within the contract

- This message is typically used in the case where **a general contract has been established** between the customer and the supplier against which goods will be ordered over a period of time on an order by order basis

- The contract will have been **previously negotiated** and accepted

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Despatch advice message (DESADV)

- A message specifying **details for goods despatched or ready for despatch under agreed conditions**

- **Principles:**
  - The message intent is **to advise of the detailed contents of a consignment**
  - The message relates to **one seller** and **one buyer** or their respective agents
  - The message relates to a **single despatch point** and **single or multiple destination points**
  - It may cover **a number of different items or packages**

Despatch advice message (DESADV)

Slide 1 (top):

```
├─UNH Message header                      ×1 (M)
├─BGM Beginning of message                ×1 (M)
├─DTM Date/time/period                     ×10 (C)
├─ALI Additional information              ×5 (C)
├─MEA Measurements                        ×5 (C)
├─MOA Monetary amount                     ×5 (C)
├─CUX Currencies                          ×9 (C)
├─Segment Group 1                         ×99 (C)
│  ├─RFF Reference                        ×1 (M)
│  └─DTM Date/time/period                 ×9 (C)
├─Segment Group 2                         ×99 (C)
│  ├─NAD Name and address                 ×1 (M)
│  ├─LOC Place/location identification    ×10 (C)
│  ├─Segment Group 3                      ×99 (C)
│  │  ├─RFF Reference                     ×1 (M)
│  │  └─DTM Date/time/period              ×99 (C)
│  └─Segment Group 4                      ×10 (C)
│     ├─CTA Contact information           ×1 (M)
│     └─COM Communication contact         ×5 (C)
├─Segment Group 5                         ×10 (C)
│  ├─TOD Terms of delivery or transport   ×1 (M)
│  ├─LOC Place/location identification    ×5 (C)
│  └─FTX Free text                        ×5 (C)
├─Segment Group 6                         ×10 (C)
│  ├─TDT Transport information            ×1 (M)
│  ├─PCD Percentage details               ×6 (C)
│  ├─TMD Transport movement details       ×1 (C)
│  └─Segment Group 7                      ×10 (C)
│     ├─LOC Place/location identification ×1 (M)
│     └─DTM Date/time/period              ×10 (C)

Segment Group 8                          ×10 (C)
├─EQD Equipment details                   ×1 (M)
├─MEA Measurements                        ×5 (C)
├─SEL Seal number                         ×25 (C)
├─EQA Attached equipment                  ×5 (C)
└─Segment Group 9                         ×10 (C)
   ├─HAN Handling instructions            ×1 (M)
   └─FTX Free text                        ×10 (C)
Segment Group 10                         ×9999 (C)
├─CPS Consignment packing sequence        ×1 (M)
├─FTX Free text                           ×5 (C)
├─QVR Quantity variances                  ×9 (C)
├─Segment Group 11                        ×9999 (C)
│  ├─PAC Package                          ×1 (M)
│  ├─MEA Measurements                     ×10 (C)
│  ├─QTY Quantity                         ×10 (C)
│  ├─Segment Group 12                     ×10 (C)
│  │  ├─HAN Handling instructions         ×1 (M)
│  │  └─FTX Free text                     ×10 (C)
│  └─Segment Group 13                     ×1000 (C)
│     ├─PCI Package identification        ×1 (M)
│     ├─RFF Reference                     ×1 (C)
│     ├─DTM Date/time/period              ×5 (C)
│     ├─Segment Group 14                  ×99 (C)
│     │  ├─GIR Related identification numbers ×1 (M)
│     │  └─DTM Date/time/period           ×5 (C)
│     └─Segment Group 15                  ×99 (C)
│        ├─GIN Goods identity number      ×1 (M)
│        └─DLM Delivery limitations       ×10 (C)
└─Segment Group 16                        ×99 (C)
   ├─COD Component details                ×1 (M)
   ├─MEA Measurements                     ×9 (C)
   ├─QTY Quantity                         ×9 (C)
   └─PCD Percentage details               ×9 (C)
```

Despatch advice message (DESADV)

Slide 2 (bottom):

```
├─Segment Group 10                        ×9999 (C)
│  └─Segment Group 17                     ×9999 (C)
│     ├─LIN Line item                     ×1 (M)
│     ├─PIA Additional product id         ×10 (C)
│     ├─IMD Item description              ×99 (C)
│     ├─MEA Measurements                  ×10 (C)
│     ├─QTY Quantity                      ×10 (C)
│     ├─ALI Additional information        ×10 (C)
│     ├─GIN Goods identity number         ×100 (C)
│     ├─GIR Related identification numbers ×100 (C)
│     ├─DLM Delivery limitations          ×100 (C)
│     ├─DTM Date/time/period              ×5 (C)
│     ├─NAD Name and address              ×99 (C)
│     ├─TDT Transport information         ×1 (C)
│     ├─TMD Transport movement details    ×1 (C)
│     ├─HAN Handling instructions         ×20 (C)
│     ├─FTX Free text                     ×99 (C)
│     ├─MOA Monetary amount               ×5 (C)
│     ├─PAC Package                       ×9 (C)
│     ├─Segment Group 18                  ×99 (C)
│     │  ├─RFF Reference                  ×1 (M)
│     │  ├─NAD Name and address           ×1 (C)
│     │  ├─CTA Contact information        ×1 (C)
│     │  └─DTM Date/time/period           ×1 (C)
│     ├─Segment Group 19                  ×9999 (C)
│     │  ├─DGS Dangerous goods            ×1 (M)
│     │  ├─QTY Quantity                   ×1 (C)
│     │  └─FTX Free text                  ×5 (C)
│     ├─Segment Group 20                  ×100 (C)
│     │  ├─LOC Place/location identification ×1 (M)
│     │  ├─NAD Name and address           ×1 (C)
│     │  ├─DTM Date/time/period           ×1 (C)
│     │  └─QTY Quantity                   ×10 (C)
│     ├─Segment Group 21                  ×1000 (C)
│     │  ├─SGP Split goods placement      ×1 (M)
│     │  └─QTY Quantity                   ×10 (C)

│     ├─Segment Group 20                  ×100 (C)
│     │  ├─LOC Place/location identification ×1 (M)
│     │  ├─NAD Name and address           ×1 (C)
│     │  ├─DTM Date/time/period           ×1 (C)
│     │  └─QTY Quantity                   ×10 (C)
│     ├─Segment Group 21                  ×1000 (C)
│     │  ├─SGP Split goods placement      ×1 (M)
│     │  └─QTY Quantity                   ×10 (C)
│     ├─Segment Group 22                  ×9999 (C)
│     │  ├─PCI Package identification     ×1 (M)
│     │  ├─DTM Date/time/period           ×5 (C)
│     │  ├─MEA Measurements               ×10 (C)
│     │  ├─QTY Quantity                   ×1 (C)
│     │  ├─Segment Group 23               ×10 (C)
│     │  │  ├─GIN Goods identity number   ×1 (M)
│     │  │  └─DLM Delivery limitations    ×100 (C)
│     │  └─Segment Group 24               ×10 (C)
│     │     ├─HAN Handling instructions   ×1 (M)
│     │     ├─FTX Free text               ×5 (C)
│     │     └─GIN Goods identity number   ×1000 (C)
│     └─Segment Group 25                  ×10 (C)
│        ├─QVR Quantity variances         ×1 (M)
│        └─DTM Date/time/period           ×5 (C)
├─CNT Control total                       ×5 (C)
└─UNT Message trailer                     ×1 (M)
```

DESADV – UNH: Message header

Pos		Segment	M/C	Repeat	Repr.	Notes
010	0062	Message reference number	M	1	an..14	
020	S009	MESSAGE IDENTIFIER	M	1		
	0065	Message type	M		an..6	
	0052	Message version number	M		an..3	
	0054	Message release number	M		an..3	
	0051	Controlling agency, coded	M		an..3	
	0057	Association assigned code	C		an..6	
	0110	Code list directory version number	C		an..6	
	0113	Message type sub-function identification	C		an..6	
030	0068	Common access reference	C	1	an..35	
040	S010	STATUS OF THE TRANSFER	C	1		
	0070	Sequence of transfers	M		n..2	
	0073	First and last transfer	C		a1	
050	S016	MESSAGE SUBSET IDENTIFICATION	C	1		
	0115	Message subset identification	M		an..14	
	0116	Message subset version number	C		an..3	
	0118	Message subset release number	C		an..3	
	0051	Controlling agency, coded	C		an..3	
060	S017	MESSAGE IMPLEMENTATION GUIDELINE IDENTIFICATION	C	1		
	0121	Message implementation guideline identification	M		an..14	
	0122	Message implementation guideline version number	C		an..3	
	0124	Message implementation guideline release number	C		an..3	
	0051	Controlling agency, coded	C		an..3	
070	S018	SCENARIO IDENTIFICATION	C	1		
	0127	Scenario identification	M		an..14	
	0128	Scenario version number	C		an..3	
	0130	Scenario release number	C		an..3	
	0051	Controlling agency, coded	C		an..3	

DESADV - BGM: Beginning of message

Pos		Segment	M/C	Repeat	Repr.	Notes
C10	C002	DOCUMENT/MESSAGE NAME	C	1		
	1001	Document name code	C		an..3	
	1131	Code list identification code	C		an..17	
	3055	Code list responsible agency code	C		an..3	
	1000	Document name	C		an..35	
C20	C106	DOCUMENT/MESSAGE IDENTIFICATION	C	1		
	1004	Document identifier	C		an..35	
	1056	Version identifier	C		an..9	
	1060	Revision identifier	C		an..6	
C30	1225	Message function code	C	1	an..3	
C40	4343	Response type code	C	1	an..3	

DESADV - TOD: Terms of delivery or transport

Pos		Segment	M/C	Repeat	Repr.	Notes
010	4055	Delivery or transport terms function code	C	1	an..3	
020	4215	Transport charges payment method code	C	1	an..3	
030	C100	TERMS OF DELIVERY OR TRANSPORT	C	1		
	4053	Delivery or transport terms description code	C		an..3	
	1131	Code list identification code	C		an..17	
	3055	Code list responsible agency code	C		an..3	
	4052	Delivery or transport terms description	C		an..70	
	4052	Delivery or transport terms description	C		an..70	

DESADV - LOC: Place/location identification

Pos		Segment	M/C	Repeat	Repr.	Notes
010	3227	Location function code qualifier	M	1	an..3	
020	C517	LOCATION IDENTIFICATION	C	1		
	3225	Location name code	C		an..35	
	1131	Code list identification code	C		an..17	
	3055	Code list responsible agency code	C		an..3	
	3224	Location name	C		an..256	
030	C519	RELATED LOCATION ONE IDENTIFICATION	C	1		
	3223	First related location name code	C		an..25	
	1131	Code list identification code	C		an..17	
	3055	Code list responsible agency code	C		an..3	
	3222	First related location name	C		an..70	
040	C553	RELATED LOCATION TWO IDENTIFICATION	C	1		
	3233	Second related location name code	C		an..25	
	1131	Code list identification code	C		an..17	
	3055	Code list responsible agency code	C		an..3	
	3232	Second related location name	C		an..70	
050	5479	Relation code	C	1	an..3	

DESADV - 3227: Location function code qualifier

1	Place of terms of delivery
	(3018) Point or port of departure, shipment or destination, as required under the applicable terms of delivery, e.g. Incoterms.
2	Payment place
	[3108] Place where funds are to be, or have been made available to the creditor.
3	Tare check place
	Place where equipment tare has been or must be checked for official assessment.
4	Goods receipt place
	Place at which the goods have been received.
5	Place of departure
	(3214) Port, airport or other location from which a means of transport or transport equipment is scheduled to depart or has departed.
6	Ward bed
	A bed in a ward.
7	Place of delivery
	(3246) Place to which the goods are to be finally delivered under transport contract terms (operational term).
8	Place of destination
	Port, airport or other location to which a means of transport or transport equipment is destined.

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DESADV – TDT: Transport information

Pos		Segment	M/C	Repeat	Repr.	Notes
010	8051	Transport stage code qualifier	M	1	an..3	
020	8028	Means of transport journey identifier	C	1	an..17	
030	C220	MODE OF TRANSPORT	C	1		
	8067	Transport mode name code	C		an..3	
	8066	Transport mode name	C		an..17	
040	C001	TRANSPORT MEANS	C	1		
	8179	Transport means description code	C		an..3	
	1131	Code list identification code	C		an..17	
	3055	Code list responsible agency code	C		an..3	
	8178	Transport means description	C		an..17	
050	C040	CARRIER	C	1		
	3127	Carrier identifier	C		an..17	
	1131	Code list identification code	C		an..17	
	3055	Code list responsible agency code	C		an..3	
	3128	Carrier name	C		an..35	
060	8101	Transit direction indicator code	C	1	an..3	
070	C401	EXCESS TRANSPORTATION INFORMATION	C	1		
	9457	Excess transportation reason code	M		an..3	
	8459	Excess transportation responsibility code	M		an..3	
	7130	Customer shipment authorisation identifier	C		an..17	
080	C222	TRANSPORT IDENTIFICATION	C	1		
	8213	Transport means identification name identifier	C		an..9	
	1131	Code list identification code	C		an..17	
	3055	Code list responsible agency code	C		an..3	
	8212	Transport means identification name	C		an..35	
	8453	Transport means nationality code	C		an..3	
090	8281	Transport means ownership indicator code	C	1	an..3	

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8179 - Transport means description code

X6	Aircraft
	A machine capable of flight. Note: 1. This code value will be removed effective with directory D.06A.
X7	Car with caravan
	A caravan towed by a car. Note: 1. This code value will be removed effective with directory D.06A.
X8	Container ship
	Vessel capable of carrying containers and other cargo. Note: 1. This code value will be removed effective with directory D.06A.
X9	Exceptional transport
	Transport for which common characteristics are not applicable (e.g. big transformers requiring special wagons, special tackles, s... removed effective with directory D.06A.
X10	Bus
	To specify that the means of transportation is a bus. Note: 1. This code value will be removed effective with directory D.06A.
X11	Ship
	A large vessel navigating deep water. Note: 1. This code value will be removed effective with directory D.06A.
X12	Ship tanker
	A large vessel equipped to transport liquids. Note: 1. This code value will be removed effective with directory D.06A.
X13	Ocean vessel
	An ocean-going vessel that is not a ship. Note: 1. This code value will be removed effective with directory D.06A.
X15	Taxi
	A means of transport identification code indicating a taxi. Note: 1. This code value will be removed effective with directory D.06A.
X16	Barge
	A category of boat used to transport material over water. Note: 1. This code value will be removed effective with directory D.06A.

LIN - Line item

Pos		Segment	M/C	Repeat	Repr.	Notes
010	1082	Line item identifier	C	1	an..6	
020	1229	Action request/notification description code	C	1	an..3	
030	C212	ITEM NUMBER IDENTIFICATION	C	1		
	7140	Item identifier	C		an..35	
	7143	Item type identification code	C		an..3	
	1131	Code list identification code	C		an..17	
	3055	Code list responsible agency code	C		an..3	
040	C829	SUB-LINE INFORMATION	C	1		
	5495	Sub-line indicator code	C		an..3	
	1082	Line item identifier	C		an..6	
050	1222	Configuration level number	C	1	n..2	
060	7083	Configuration operation code	C	1	an..3	

IMD - Item description

Pos		Segment	M/C	Repeat	Repr.	Notes
010	7077	Description format code	C	1	an..3	
020	C272	ITEM CHARACTERISTIC	C	1		
	7081	Item characteristic code	C		an..3	
	1131	Code list identification code	C		an..17	
	3055	Code list responsible agency code	C		an..3	
030	C273	ITEM DESCRIPTION	C	1		
	7009	Item description code	C		an..17	
	1131	Code list identification code	C		an..17	
	3055	Code list responsible agency code	C		an..3	
	7008	Item description	C		an..256	
	7008	Item description	C		an..256	
	3453	Language name code	C		an..3	
040	7383	Surface or layer code	C	1	an..3	

DESADV - Example

1	UNH	UNH+1+DESADV:D:97A:UN'
2	BGM	BGM+351+1234+9'
3	DTM	DTM+137:20030702:102'
4	NAD	NAD+BY+12345::91'
5	NAD	NAD+SE+ABCDE::92'
6	TDT	TDT+25+1234+3:Road++CarrierCode::92:CarrierName'
7	CPS	CPS+1++4'
8	LIN	LIN+1++66550000011311-01:BP::92+1:B'
9	PIA	PIA+1+TESTIDLIEF:VP'00
10	QTY	QTY+12:1000:PCE'
11	DTM	DTM+11:20030705:102'
12	NAD	NAD+ST+001::92'
13	RFF	RFF+CT:551000000110'
14	RFF	RFF+AAK:12345678'
15	LOC	LOC+11+00001::92'
16	CPS	CPS+2++1'
17	PAC	PAC+1++PMatInner::92'
18	QTY	QTY+52:10:PCE'

DESADV - Example

```
19    PCI    PCI+17+S0001+1'
20    PCI    PCI+17+S0002+1'
21    PCI    PCI+17+S0003+1'
22    PCI    PCI+17+S0004+1'
23    PCI    PCI+17+S0005+1'
24    PCI    PCI+17+S0006+1'
25    PAC    PAC+6+2+PHM01::91'
26    LIN    LIN+1++66550000011311-01:BP::92'
27    CPS    CPS+3++3'
28    PAC    PAC+1++PMatOuter::92'
29    QTY    QTY+1:1:PCE'
30    PCI    PCI+17+M0001+1'
31    GIN    GIN+ML+S0001'
32    GIN    GIN+ML+S0002'
33    GIN    GIN+ML+S0003'
34    GIN    GIN+ML+S0004'
```

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DESADV - Example

```
35    PAC    PAC+1+2+PHM02::92'
36    CPS    CPS+3++3'
37    PAC    PAC+1++PMatOuter::92'
38    QTY    QTY+1:1:PCE'
39    PCI    PCI+17+M0002+1'
40    GIN    GIN+ML+S0005'
41    GIN    GIN+ML+S0006'
42    PAC    PAC+1+2+PHM02::92'
43    UNT    UNT+43+1'
```

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Current state of EDIFACT

- EDIFACT is still **widely used** in the **high tech**, **civil aviation** and **tourism** industries and is likely to **remain** so <u>for some time</u> ...

  - ... due to **the amount of software** making use of it and the need for newer systems to be able to integrate with legacy systems

- **Europe** started early with adopting EDIFACT and therefore has a large installed base, where as for example the **Asian region** started later with B2B implementations and is therefore using more XML standards

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ANSI ASC X12

- The **official** designation of the **US National standards body** for the development and maintenance of EDI standards for the **United States**

- The group was founded in **1979** and is an accredited standards committee under the **American National Standards Institute**

- The acronym stands for "**American National Standards Institute Accredited Standards Committee X12**"

  - with the designation of X12 being a **sequential** designator assigned by ANSI at the time of accreditation with no other significance

- **RosettaNet** is a growing industry de-facto standard in the <u>high tech industry</u>, partly replacing ANSI

EDIFICE

- Web site: http://www.edifice.org

- The European B2B Forum for the **Electronics Industry**

- Provides a **forum** for companies with interests in Computing, Electronics, and Telecommunication, which as a group, drives and enables global standardised B2B adoption in Europe

- EDIFICE represents **the majority of the European electronics industry** and is **recognised as such by other organisations**

- EDIFICE is a **non-profit organisation**, organised in the form of an association and governed by the articles of this Agreement, any regulations promulgated hereunder and by Articles 60-79 of the Swiss Civil Code

EDIFICE

- The **objectives** of EDIFICE are:

  - to support, influence and promote the development, implementation and use of **international standards** and related implementation **guidelines** for B2B;

  - to design, develop and maintain a **Framework for B2B**;

  - to maintain **relationships with other communities** and be receptive to **cross industry collaboration**, aiming at the implementation of B2B;

  - to act as a **B2B competence centre** for the industry, setting direction, creating awareness and providing learning opportunities on B2B concepts;

  - to **share B2B experiences** on the implementation of standards

Web-EDI

- **Web-EDI** solutions **translates EDI data** into many formats (including HTML, XML and proprietary formats), allowing non-EDI users to read and send EDI messages to their trading partner

- The core company ("Hub") or a trading partner can benefit from **fast, secure, reliable Web-based trading solutions**

  - Companies of all sizes, particularly smaller organizations

- **To reduce the complexity, cost, and time** associated with conducting business electronically

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Web-EDI

- Web-EDI provides companies with options **to reach trading partners** who have less sophisticated or non-compatible e-business infrastructures

- Web EDI service acts as a **bi-directional EDI to HTML, XML, or proprietary format converter**

  - "Hub" customers can continue sending and receiving EDI **using their current systems and applications**

  - Smaller trading partners can then use a **secure browser-based trading tool** to view, update and send EDI documents such as Invoices, Purchase Orders, Advanced Ship Notices, and more
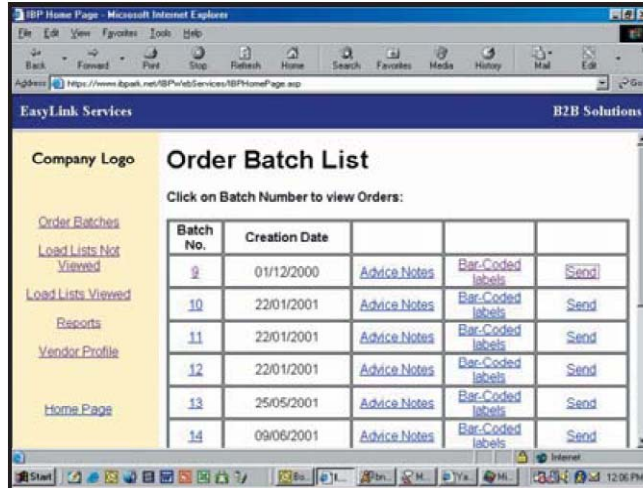
Web-EDI

Web-EDI Architecture
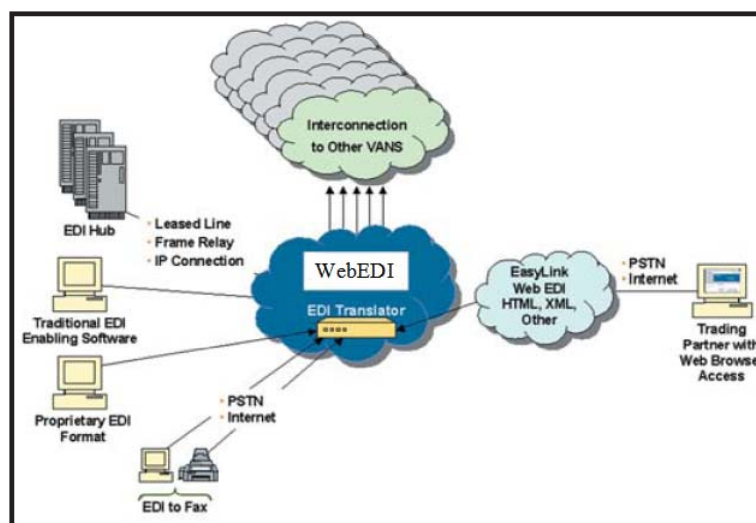
Web-EDI features

- **Main features** a Web EDI solution should provide:

  - **Multiple network connectivity options**, including dedicated, dial-up, and many IP based access methods

  - **Interconnections with major e-commerce networks** worldwide

  - High capacity networks for **rapid message delivery**

  - Strong **security**, including HTTPS, IPSec, SSL, and others

  - **Non-repudiation** and **message delivery confirmation**

  - Technical implementation **support** and **customization** services

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Web-EDI benefits

- Some of **benefits** a Web EDI solution should provide:

  - **Communicate electronically** with all trading partners

  - **Decrease business processing costs** and **fuel faster transaction** completion via **elimination** of slow, manual, error-prone, paper-intensive transaction delivery methods

  - **Increase efficiency** by consolidating transaction delivery through a single vendor with multiple modes of delivery

  - **No changes to current EDI processes/systems**: Web EDI leverages existing infra-structure to reach all of an enterprise's trading partners, regardless of their preferred connectivity

References

- **EDI** (provided by the teacher)